

REMARKS

In the present Amendment, claim 1 is amended to incorporate the subject matter of claim 6, which depends from claim 1. Claim 6 is canceled.

No new matter is added and entry of the Amendment is respectfully requested. Upon entry of the Amendment, claims 1-5 and 7-9 will be pending.

In paragraph 4 of the Office Action, claims 1-2, 4 and 6-9 are rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,974,845 to Minamino et al.

Applicants respectfully traverse the rejection.

Minamino does not disclose or render obvious the crosslinkable elastomer composition for plasma process recited by present claim 1. As discussed at page 6, lines 8-15 of the specification, in the present invention, the carbon fluoride filler is preferably heat treated in advance, preferably at 300 to 550 °C, and then used. When heat treatment is not conducted or conducted at lower than 300°C, the impure gas and the carbon fluoride is not removed and the impure gas tends to degrade the resistance to plasma of the carbon fluoride. When thermal treatment is conducted at a temperature higher than 550°C, thermal decomposition reaction tends to occur.

Applicants' crosslinkable elastomer composition for plasma process is patentable over Minamino, at least because Minamino fails to disclose or fairly suggest a previously heat-treated carbon fluoride filler, heat treated at 300 to 550 °C in advance.

In this regard, Minamino discloses that, as the case demands, a filler may be blended with the composition. See Minamino at col. 6, lines 25-27. In the next paragraph, Minamino

discloses six broad categories of conventional fillers (e.g., metal oxides, metal hydroxides, carbonates and silicates) and 33 specific fillers (e.g., titanium oxide, barium sulfate and carbon black). See Minamino at col. 6, lines 28-41. Within this generic list of fillers, Minamino includes carbon fluoride. However, Minamino does not disclose or suggest employing a carbon fluoride filler that is heat-treated at 300 to 550 °C in advance.

Minamino also fails to disclose a single working Example or Comparative Example in which carbon fluoride or any other filler is blended into the polymer composition. Further, Minamino does not disclose that carbon fluoride filler (or for that matter, any of the other generically listed fillers) advantageously imparts plasma resistance to a molded article made from the polymer composition.

On the other hand, present claim 1 specifically recites a composition comprising an elastomer and a preheat treated carbon fluoride filler. Moreover, Applicants disclose that when conventional fillers are used, the material does not have sufficient resistance to all of NF₃ plasma treatment, O₂ plasma treatment and fluorine plasma treatment. In this regard, Applicants disclose that fillers such as carbon black, silica, barium sulfate and titanium oxide are ineffective. See the present specification at page 2, lines 8-14. Each of these fillers are mentioned in Minamino's generic disclosure.

The remarkably enhanced plasma resistance obtained by employing a preheat-treated carbon fluoride filler can be seen by comparing Applicants' working Examples 1 and 2. The weight loss of Example 2 employing a preheat-treated fluoride filler (350°C for 2 hours) is smaller than that of Example 1 employing a fluoride filler that was not heat treated in advance,

with respect to each of high density F radical, O₂ plasma and CF₄ plasma treatment. See Table 4 at page 48 of the present specification. Moreover, Applicants' comparative Examples 1, 3 and 4, when compared to Applicants' working Examples, demonstrate the advantage of using a carbon fluoride filler instead of the conventional fillers disclosed by Minamino.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the § 102(e) rejection of claims 1-2, 4 and 6-9 based on Minamino.

In paragraph 7 of the Office Action, claims 1-2, 4 and 6-9 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,430,103 to Ohata et al., U.S. Patent No. 5,444,116 to Amin et al. ("Amin '116") or U.S. Patent No. 5,461,107 to Amin et al. ("Amin '107"), each individually in view of Minamino.

Applicants respectfully traverse the rejection.

Ohata, Amin '116, Amin '107 and Minamino, alone or in combination, do not disclose or render obvious the crosslinkable elastomer composition for plasma process according to present claim 1.

Applicants' crosslinkable elastomer composition for plasma process is patentable over cited references, at least because the cited references fail to disclose or fairly suggest a previously heat-treated carbon fluoride filler.

As noted above, Minamino does not disclose or suggest a carbon fluoride filler heat-treated in advance at 300 to 550 °C. Thus, each of Ohata, Amin '116 and Amin '107 fail to cure Minamino's deficiency.

Ohata

Ohata discloses a “crosslinkable composition which comprises an internally crosslinked acrylic elastomer which is crosslinkable with peroxide, fluoroelastomer and a crosslinking agent for at least one of the elastomers.” See Ohata’s Abstract. Ohata also discloses that a filler may be added to the composition, when required, and Ohata provides a generic list of conventional fillers. See Ohata at col. 4, at lines 6-22. In this section, Ohata discloses carbon fluoride, but also lists fillers that do not have sufficient resistance to all of NF₃ plasma treatment, O₂ plasma treatment and fluorine plasma treatment. Importantly, Ohata fails to disclose a preheat-treated carbon fluoride filler. Therefore, Ohata does not make up for the deficiency of Minamino.

Furthermore, the Examiner concedes that Ohata is silent with respect to plasma treatment.

Thus, Ohata in view of Minamino does not disclose or suggest the crosslinkable elastomer composition for plasma process comprising a crosslinkable elastomer and a preheat-treated carbon fluoride filler, heat-treated in advance at 300 to 550 °C.

Amin ‘116 & Amin ‘107

Amin ‘116 discloses an elastomeric composition including a perfluoroelastomer and a particulate fluorinated graphite having a specific composition. See, e.g., Amin ‘166’s Abstract and claim 1. Amin ‘107 discloses a seal for preventing leakage comprising a perfluoroelastomer and a particulate fluorinated graphite having a specific composition.

The Examiner asserts that Applicants’ carbon fluoride is the same as the particulate fluorinated graphite disclosed by Amin ‘116 and Amin ‘107.

However, that is not the case. Particularly, Amin '116 and Amin '107 fail to disclose or suggest employing a carbon fluoride filler that is previously heat-treated at 300 to 550 °C.

Thus, the cited references even if considered in combination fail to teach or suggest a composition that shows significant plasma resistance to plasma treatments of NF₃ plasma treatment, O₂ plasma treatment and fluorine plasma treatment, employing carbon fluoride filler heat treated at 300 to 550 °C in advance.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the § 103(a) rejection of claims 1-2, 4 and 6-9 based on Ohata, Amin '107 or Amin '116, each individually in view Minamino.

In paragraph 9, claims 3 and 5 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ohata, Amin '107 or Amin '116, each individually in view of Minamino, and further in view of U.S. Patent No. 6,610,761 to Matsumoto et al.

Applicants respectfully traverse the rejection.

Claims 3 and 5 depend indirectly from independent claim 1, which recites a crosslinkable elastomer composition comprising a carbon fluoride filler that is heat treated at 300 to 550 °C in advance. Matsumoto does not disclose or suggest employing a preheat-treated carbon fluoride filler. Similar to Minamino and Ohata, Matsumoto only discloses a generic list of fillers. See Matsumoto at col. 5, lines 36-48. Accordingly, Matsumoto does not make up for the deficiencies of Minamino, Ohata, Amin '116 and Amin '107, and claims 3 and 5 are patentable at least by virtue of their dependency.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 10/541,753

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In view of the above, Applicants respectfully request reconsideration and withdrawal of the § 103(a) rejection of claims 3 and 5 based on Ohata, Amin '107 or Amin '116, each individually in view Minamino, and further in view of Matsumoto.

Allowance is respectfully requested. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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